

**Artificial Intelligence & Machine Learning Lab**

SUBMITTED TO SUBMITTED BY

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Btech CSE DevOps B1

**Lab 1**

**Q1. Write a Python program to perform basic arithmetic operations (addition, subtraction, multiplication, division, and modulus) on two numbers.**

1. **Prompt the user to enter two numbers:**

num1 = float(input("Enter the num 1: "))

num2 = float(input("Enter the num 2: "))

1. **Perform the arithmetic operations and print the results:**

addition = num1 + num2

subtraction = num1 - num2

multiplication = num1 \* num2

division = num1 / num2

modulus = num1 % num2

print(f"Addition: {num1} + {num2} = {addition}")

print(f"Subtraction: {num1} - {num2} = {subtraction}")

print(f"Multiplication: {num1} \* {num2} = {multiplication}")

print(f"Division: {num1} / {num2} = {division}")

print(f"Modulus: {num1} % {num2} = {modulus}")

Example Output:

Enter the num 1: 5

Enter the num 2: 10

Addition: 5.0 + 10.0 = 15.0

Subtraction: 5.0 - 10.0 = -5.0

Multiplication: 5.0 \* 10.0 = 50.0

Division: 5.0 / 10.0 = 0.5

Modulus: 5.0 % 10.0 = 5.0

**Q2. Create variables of different data types (integer, float, string, boolean) and perform basic operations on them.**

1. **Assign values to variables of different data types:**

integer = 10

float\_val = 50.0

string = "Hello"

boolean = True

1. **Perform arithmetic operations on numeric data types:**

addition = integer + float\_val

subtraction = integer - float\_val

multiplication = integer \* float\_val

division = integer / float\_val

modulus = integer % float\_val

print(f"Addition: {integer} + {float\_val} = {addition}")

print(f"Subtraction: {integer} - {float\_val} = {subtraction}")

print(f"Multiplication: {integer} \* {float\_val} = {multiplication}")

print(f"Division: {integer} / {float\_val} = {division}")

print(f"Modulus: {integer} % {float\_val} = {modulus}")

1. **Concatenate strings using the + operator:**

concatenated\_string = string + " World !!"

print(concatenated\_string)

Example Output:

Hello World !!

1. **Use logical operators to evaluate boolean expressions:**

and\_op = boolean and False

or\_op = boolean or False

not\_op = not boolean

print(and\_op) # False

print(or\_op) # True

print(not\_op) # False

**Q3. Write a program to take user input, process it, and display the result.**

1. **Prompt the user to enter their name:**

name = input("Enter your name here: ")

1. **Greet the user using their name:**

greet = f"Hello, {name}! Nice to meet you !!"

print(greet)

Example Output:

Enter your name here: stuvwxyz

Hello, stuvwxyz! Nice to meet you !!

1. **Calculate and print the user's age based on their birth year:**

dob = int(input("Enter your year of birth: "))

age = 2024 - dob

print(f"Currently your age is: {age}")

Example Output:

Enter your year of birth: 2005

Currently your age is: 19

**Q4. Write a program to check if a number is even or odd.**

1. **Prompt the user to enter a number:**

number = int(input("Enter the number you want to get checked: "))

1. **Use the modulus operator to determine if the number is even or odd:**

if number % 2 == 0:

print("The number given is even.")

else:

print("The number given is odd.")

Example Output:

Enter the number you want to get checked: 20

The number given is even.

**Q5. Write a program to print the numbers from 1 to 10 using both for and while loops.**

* **Using a for loop to iterate through a range of numbers:**

for i in range(1, 11):

print(i)

Output:

1

2

3

4

5

6

7

8

9

10

* **Using a while loop with a counter variable:**

counter = 0

while counter < 11:

print(counter)

counter += 1

Output:

0

1

2

3

4

5

6

7

8

9

10

Printed the numbers from 1 to 10 using both while and for loops.

**Q6. Create a list, access elements, modify elements, and perform list operations.**

* **Create a list of fruits:**

fruits = ["Apple", "Banana", "Cherry", "Date", "Orange"]

print("Accessing elements using indexing:")

print(f"First fruit: {fruits[0]}")

print(f"Third fruit: {fruits[2]}")

print(f"Last fruit: {fruits[-1]}")

Output:

Accessing elements using indexing:

First fruit: Apple

Third fruit: Cherry

Last fruit: Orange

* **Access elements using indexing:**

fruits[1] = "Kiwies"

print(f"Modified list is: {fruits}")

Output:

Modified list is: ['Apple', 'Kiwies', 'Cherry', 'Date', 'Orange']

* **Add and remove elements from the list:**

fruits.append("Watermelon")

fruits.remove("Watermelon")

print(f"Modified list is: {fruits}")

Output:

Modified list is: ['Apple', 'Kiwies', 'Cherry', 'Date', 'Orange']

* **Find the length of the list:**

length = len(fruits)

print(length)

Output:

5

* **Sort the list in ascending order:**

fruits.sort()

print(f"Sorted fruits list is: {fruits}")

Output:

Sorted fruits list is: ['Apple', 'Cherry', 'Date', 'Kiwies', 'Orange']

**Q7. Manipulate strings using various built-in functions.**

* **Create a string variable and find the length of the string:**

text = "Hello, welcome to the world of Python programming!"

length\_of\_string = len(text)

print(f"Length of the string: {length\_of\_string}")

Output:

Length of the string: 50

* **Convert the string to uppercase and lowercase:**

uppercase\_string = text.upper()

lowercase\_string = text.lower()

print(f"Uppercase version: {uppercase\_string}")

print(f"Lowercase version: {lowercase\_string}")

Output:

Uppercase version: HELLO, WELCOME TO THE WORLD OF PYTHON PROGRAMMING!

Lowercase version: hello, welcome to the world of python programming!

* **Check if a substring exists in the string:**

substring = "Python"

is\_substring\_present = substring in text

print(f"Is '{substring}' present in the string? {is\_substring\_present}")

Output:

Is 'Python' present in the string? True

* **Split the string into a list of words:**

words\_list = text.split()

print(f"List of words: {words\_list}")

Output:

List of words: ['Hello,', 'welcome', 'to', 'the', 'world', 'of', 'Python', 'programming!']

**Q8. Write a program to find the largest and smallest number in a list.**

* **Program:**

numbers = [34, 78, 12, 90, 5, 67, 88, 21]

largest\_number = max(numbers)

smallest\_number = min(numbers)

print(f"The largest number in the list is: {largest\_number}")

print(f"The smallest number in the list is: {smallest\_number}")

Output:

The largest number in the list is: 90

The smallest number in the list is: 5